

	130	140	150	160		
1093	GGGGAAACCCAGCACGAGTGTCTGTC	CTACCCGCAT	TT		M. tuberculosis	
422	GGGGAAACCCAGCACGAGTGTCTGTC	TTACCGT	TATCT		M. avium	
422	GGGGAAACCCAGCACGAGTGTCTGTC	TTACCGT	TATCT		M. paratuberc.	
507	GGGGAAACCCGGCACGAGTGTCTGTC	ACCCAA	ACGCT		M. phlei	
432	GGGGAAACCCAA	CACGAGT	AA	GTCGTGTTACCGT	TATCT	M. leprae
207	GGGGAAACCCAGCACGAGT	ATGTCTGTC	TTACCGT	TATCT	M. gastri	
150	GGGGAAACCCAGCACGAGTGTCTGTC	TTACCGC	CATCT		M. kansasii	
2588	GGGGAAACCCGGCACGAGTGTCTGTC	ACCA	GGCGCT		M. smegmatis	
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	210	220	230	240		
1172	CATCTCAGTACCCGTAGGAG	AGAGAAAACAATTGTGATTCC			M. tuberculosis	
501	CATCTCAGTACCCGTAGGAGA	AGAGAAAACAATTGTGATTCC			M. avium	
501	CATCTCAGTACCCGTAGGAGA	AGAGAAAACAATTGTGATTCC			M. paratuberc.	
586	CATCTCAGTACCCGTAGA	AGAGAGAAAACAATTGTGATTCC			M. phlei	
511	CATCTCAGTACCCGTAGGAGA	AGAGAAAACAATTGTGATTCC			M. leprae	
286	CATCTCAGTACCCGTAGGAGA	AGAGAAAACAAAAGTGATTCC			M. gastri	
229	CATCTCAGTACCCGTAGGAGA	AGAGAAAACAAAAGTGATTCC			M. kansasii	
2667	CATCTCAGT	CCC GTAGGA	AGAGAAAACAAA	ATGTGATTCC	M. smegmatis	
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	330	340	350	360		
1289	TGTGGGAG	GATATGTCTCAGCGCTACCCGGCTGAGA	GG		M. tuberculosis	
617	TGTGGGATT	GATATGTCTCAGCTCTACCT	GGCTGAGG	GG	M. avium	
617	TGTGGGATT	GATATGTCTCAGCTCTACCT	GGCTGAGG	GG	M. paratuberc.	
703	TGTGGGGCCTGT	GTGTC	CATCGTCCG	CCGGCGATGGCAG	M. phlei	
629	TGTGGGATT	GGTATGTCTCA	CTCTACCT	GGTGAGG	GG M. leprae	
404	TGTGGGAT	CGATA	GTCTCAGCTCTACCCGGCTGAGG	GG	M. gastri	
347	TGTGGGAT	CGATA	GTCTCAGCTCTACCCGGCTGAGG	GG	M. kansasii	
2785	TGTGGGACCT	ATCTTC	CGCC	CTACCTGGCTGAGG	GG M. smegmatis	

Figure 1A

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	370	380	390	400	
1327	CAGTCAGAAAGTGTCTGGTTAGCGGAAGTGGCCTGGGAT				M. tuberculosis
656	TAGTCAGAAAGTGTCTGGTTAGCGGAAGTGGCCTGGGAT				M. avium
656	TAGTCAGAAAGTGTCTGGTTAGCGGAAGTGGCCTGGGAT				M. paratuberc.
742	TAGTCAAAGCAGTGTGGTTAGCTGAAGTGGCCTGGGAT				M. phlei
668	TAGTCAGAAAGTGTCTGGTTAGCGGAAGTGGCCTGGGAT				M. leprae
443	CAGTCAGAAAGTGTCTGGTTAGCGGAAGTGGCCTGGGAT				M. gastri
386	CAGTCAGAAAGTGTCTGGTTAGCGGAAGTGGCCTGGGAT				M. kansasii
2823	CAGTCAAAGATGTGTGGTTAGCGGAAGTGGCCTGGGAT				M. smegmatis

	450	460	470	480	
1406	CGGCACCTGCCTTAGTATCAATTCCCGAGTAGCAGCGGGCC				M. tuberculosis
735	CGGCACCTGCCTTATATCAACACCCGAGTAGCAGCGGGCC				M. avium
735	CGGCACCTGCCTTATATCAACACCCGAGTAGCAGCGGGCC				M. paratuberc.
820	TGCTGCCGTGTACAGG-TCCCGAGTAGCAGCGGGCC				M. phlei
747	TGGCACCTGCCTTGTATCAATTCCCGAGTAGCAGCGGGCC				M. leprae
522	CGGCACCTGCCTTGTATCAATTCCCGAGTAGCAGCGGGCC				M. gastri
465	CGGCACCTGCCTTGTATCAATTCCCGAGTAGCAGCGGGCC				M. kansasii
2902	CGACGTCTGCTGATGGTTCCCGAGTAGCAGCGGGCC				M. smegmatis

	490	500	510	520	
1446	CGTGGAAATCGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. tuberculosis
775	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. avium
775	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. paratuberc.
857	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. phlei
787	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. leprae
562	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. gastri
505	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. kansasii
2942	CGTGGAAATCTGCTGTGAATCTGCCGGGACCACCCGGTAAG				M. smegmatis

Figure 1B

	610	620	630	640	
1566	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. tuberculosis
894	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. avium
894	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. paratuberc.
976	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. phlei
907	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. leprae
682	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. gastri
625	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. kansasii
3062	GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT				M. smegmatis
	650	660	670	680	
1606	TTTCCTCTCCGGAGGGGTGGTGTGGCGTGCCTTTGA				M. tuberculosis
934	C-----GTGGGGGTGATGGCGTGCCTTTGA				M. avium
934	C-----GTGGGGGTGATGGCGTGCCTTTGA				M. paratuberc.
1016	CTT-----GTAGTGGGGGTGATGGCGTGCCTTTGA				M. phlei
947	T-----GTGGGGGTGATGGCGTGCCTTTGA				M. leprae
722	T-----GTGGGGGTGATGGCGTGCCTTTGA				M. gastri
665	C-----GTGGGGGTGATGGCGTGCCTTTGA				M. kansasii
3102	ACGTGT-----GTGGGGGTGATGGCGTGCCTTTGA				M. smegmatis
	690	700	710	720	
1646	AGAATGAGCCTGCGAGTCAGGGACATGTCGCAAGGTTAAC				M. tuberculosis
4	AGAATGAGCCTGCGAGTCAGGGACATGTCGCAAGGTTAAC				M. bovis
959	AGAATGAGCCTGCGAGTCAGGGACACGTCGCGAGGTTAAC				M. avium
23	AGAATGAGCCTGCGAGTCAGGGACACGTCGCGAGGTTAAC				M. intracellular
959	AGAATGAGCCTGCGAGTCAGGGACACGTCGCGAGGTTAAC				M. paratuberc.
1046	AGAATGAGCCTGCGAGTCAGGGACATGTCGCGAGGTTAAC				M. phlei
972	AGAATGAGCCTGCGAGTCAGGGACATGTCGCGAGGTTAAC				M. leprae
747	AGAATGAGCCTGCGAGTCAGGGACATGTCGCGAGGTTAAC				M. gastri
690	AGAATGAGCCTGCGAGTCAGGGACATGTCGCGAGGTTAAC				M. kansasii
3132	AGAATGAGCCTGCGAGTCAGGGACATGTCGCGAGGTTAAC				M. smegmatis

Figure 1C

	770	780	790	800	
1726	GACCCACACGCGCATA CGCGCGTGTGAATAGTGGCGTGT				M. tuberculosis
84	CGACCCACACGCGCATA CGCGCGTGTGAATAGTGGCGTGT				M. bovis
1039	CG	-----CATOCOCITTTGGGTTGT	-----	AGTGGCGTGT	M. avium
103	CG	-----CATOCOCITTTGGGGTTGT	-----	AGTGGCGTGT	M. intracellulat
1039	CG	-----CATOCCTTTGGGGTTGT	-----	AGTGGCGTGT	M. paratuberc.
1126	CGTAT	CCAACCTGTTGGGTTGGTGT	-----	AGTGGGTGT	M. phlei
1052	CGTAT	--CACGTTGAGCGTTGT	-----	AGTGGCGTGT	M. leprae
827	CGTAT	--CACGCGTAAGCGTTGT	-----	AGTGGCGTGT	M. gastri
770	CGTAT	--CGCGCGGAGCGTTGT	-----	AGTGGCGTGT	M. kansasii
3212	CGTAT	--CCACACAGAGTGTGTGT	-----	AGTGGGTGT	M. smegmatis

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	970	980	990	1000	
1926	ATTTAGGTGCAGCGTTGCGTGGTTCACCGGGAGGTAGAG				M. tuberculosis
1228	ATTTAGGTGCAGCGTTGCGTGGTTCACCA CGGAGGTAGAG				M. avium
1228	ATTTAGGTGCAGCGTTGCGTGGTTCACCA CGGAGGTAGAG				M. paratuberc.
1322	ATTTAGGTGCAGCGT	GCATGTTCTTATCGGAGGTAGAG	-----	-----	M. phlei
1244	ATTTAGGTGCAGCGTTGCGTGGTTCACCA CGGAGGTAGAG	-----	-----	-----	M. leprae
1019	ATTTAGGTGCAGCGTTGCGTGT	TTTCAACCA CGGAGGTAGAG	-----	-----	M. gastri
962	ATTTAGGTGCAGCGTTGCGTGT	TTTCAACCA CGGAGGTAGAG	-----	-----	M. kansasii
3408	ATTTAGGTGCAGCGT	GCATGTTCTGCGGAGGTAGAG	-----	-----	M. smegmatis

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	1050	1060	1070	1080	
2005	CAGCCAAACTCCGAATGCCG-TGGTG-TA-AAGCGTGGCA				M. tuberculosis
1307	CAGCCAAACTCCGAATGCCG-TGGTG-TAAAAGCGTGGCA				M. avium
1307	CAGCCAAACTCCGAATGCCG-TGGTG-TAAAAGCGTGGCA				M. paratuberc.
1401	CAGCCAAACTCCGAATGCCG	ATAAAG-TGAAAGCGTGGCA	-----	-----	M. phlei
1323	CAGCCAAACTCCGAATGCCG-TGGTG	-----TAAAAGCGTGGCA	-----	-----	M. leprae
1098	CAGCCAAACTCCGAATGCCG-TGGTG-TATA	CGCGTGGCA	-----	-----	M. gastri
1041	CAGCCAAACTCCGAATGCCG-TGGTG-TATA	CGCGTGGCA	-----	-----	M. kansasii
3486	CAGCCAAACTCCGAATGCCG	GTAAAGGCGAAGAGCGGGAA	-----	-----	M. smegmatis

Figure 1D

	1130	1140	1150	1160	
2082	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	CAAGCGTGTGCTA	M. tuberculosis		
1385	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. avium			
1385	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. paratuberc.			
1479	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. phlei			
1401	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. leprae			
1175	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. gastri			
1118	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. kansasii			
3566	ACAGCCCAGATCGCCGGCTAAGGCCCTAAGCGTGTGCTA	M. smegmatis			
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	1290	1300	1310	1320	
2241	CTCAAGCACACCGGCCGAAGCCGGCACAT	CCACCTTGT-	M. tuberculosis		
1544	CTCAAGCACACCGGCCGAAGCCGGCACAT	TCATCTT-TA	M. avium		
1544	CTCAAGCACACCGGCCGAAGCCGGCACAT	TCATCTT-TA	M. paratuberc.		
1638	CTCAAGCACACCGGCCGAAGCCGGCACAT	-ATCAGGCTTTTG	M. phlei		
1560	CTCAAGCACACCGGCCGAAGCCGGCACAT	TCACCTTCTTA	M. leprae		
1334	CTCAAGCACACCGGCCGAAGCCGGCACAT	-ACCGC--A	M. gastri		
1277	CTCAAGCACACCGGCCGAAGCCGGCACAT	-ACCGC--A	M. kansasii		
3726	CTCAAGCACACCGGCCGAAGCCGGCACAT	-GCCAACGTCTTG	M. smegmatis		
	1330	1340	1350	1360	
2280	-GGTGGGTGTGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. tuberculosis		
1583	GGGTGGATGTGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. avium		
1583	GGGTGGATGTGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. paratuberc.		
1676	TGGCTGGTGTGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. phlei		
1600	GGGTGGATGTGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. leprae		
1367	AGGT-----TGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. gastri		
1310	AGGT-----TGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. kansasii		
3764	TT-----TGGGTAGGGGAGCGTCCCTCATTCA	GCAGCGAAG	M. smegmatis		

Figure 1E

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1370 1380 1390 1400

2319 **CCAC**GGGTGACCGGTGGTGAGGGTGGGGAGTGAGAAT M. tuberculosis  
1623 CT-CCGGGTGACCGGTGGTGAGGGTGGGGAGTGAGAAT M. avium  
1623 CT-CCGJGTGA**T**CGGTGGTGAGGGTGGGGAGTGAGAAT M. paratuberc.  
1716 CGGCCG**A**GTGA**T**CGGTGGTGAGGGTGGGGAGTGAGAAT M. phlei  
1640 CCTCCGGGT**A**CCGGTGGTGAGGGTGGGGAGTGAGAAT M. leprae  
1402 CGGCCGGGTGACCGGTGGTGAGG**A**TGGGGAGTGAGAAT M. gastri  
1345 CTGCCGGGTGACCGGTGGTGAGG**A**TGGGGAGTGAGAAT M. kansasii  
3796 CGGCCG**A**GT**A**T**C**GAGTGGTGAGGGTGGGGAGTGAGAAT M. smegmatis

1410 1420 1430 1440

2359 GCAGGCATGAGTAGCGA**A**AGGCAAGTGAGAACCTTGC**CC** M. tuberculosis  
1662 GCAGGCATGAGTAGCGA**A**AGGCAAGTGAGAACCTTGC**CC** M. avium  
1662 GCA**GG**CATGAGTAGCGA**A**AGGCAAGTGAGAACCTTGC**CC** M. paratuberc.  
1756 GCAGGCATGAGTAGCGA**A**AGGCAAGTGAGAACCTT**C****CC** M. phlei  
1680 GCAGGCATGAGTAGCGA**A**AGGCAAGTGAGAACCTTGC**CC** M. leprae  
1442 GCAGGCATGAGTAGCGA**A**AGGCAAGTGAGAACCTTGC**CC** M. gastri  
1385 GCAGGCATGAGTAGCGA**A**AGGCAAGTGAGAACCTTGC**CC** M. kansasii  
3836 GCAGGCATGAGTAGCGA**T**AGGCAAGTGAGAACCTT**C****CC** M. smegmatis

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1570 1580 1590 1600

2519 CG**CCC**GTGAC**A**ATCA-GCGGTACTAACCAACCCAAAACCG M. tuberculosis  
1821 CG**T**CCCGTGAT**A**GAATCA-GCGGTACTAACCAACCCAAAACCG M. avium  
1821 CG**T**CCCGTGAT**A**GAATCA-GCGGTACTAACCAACCCAAAACCG M. paratuberc.  
1915 CG**T**CCCGTGAT**A**GAAT**T**CTATT**T**CTAACCAACCCAAAACCG M. phlei  
1840 CGCCCGTGAT**A**GAATCA-GCGGTACTAACCAACCCAAAACCG M. leprae  
1602 CGCCCGTGAT**A**GAATCA-GCGGTACTAACCAACCCAAAACCG M. gastri  
1545 CGCCCGTGAT**A**GAATCA-GCGGTACTAACCAACCCAAAACCG M. kansasii  
3996 CG**T**CC**A**T**G**A**T**GAATCA-GCGGTACTAACCA**T**CCAAAACCG M. smegmatis

Figure 1F

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1610 1620 1630 1640

2558 GAT-CGATCAC-TCCCCTTCGGGGG-TGTGGAGTTC-TGG M. tuberculosis  
1860 GAT-CGACAT-TCCCCTTCGGGGC-GTGGCGATT-CGG M. avium  
1860 GAT-CGACAT-TCCCCTTCGGGGC-GTGGCGATT-CGG M. paratuberc.  
1955 GGC-CGATC-ATCC-TTCGGGG-GTGGAGGTG-GG M. phlei  
1879 GAT-CGACATATCCCCTTCGGGGGATATGGAGGT-CGG M. leprae  
1641 GAT-CGATCAC-TCCCCTTCGGGGG-GTGGAGGTC-TGG M. gastri  
1584 GAT-CGATCAC-TCCCCTTCGGGGC-GTGGAGGTC-TGG M. kansasii  
4035 ACCGTGAACGCAAC-TTCGGGG-TGTGGCGTTGGTGG M. smegmatis

1650 1660 1670 1680

2594 GGCTGCGTGGGAACCTCGCTGGTAGTAGTCAGG-GAAAGGG M. tuberculosis  
1896 GGCTGCGTGGGAACCTCGCTGGTAGTAGTCAGGAAATGGG M. avium  
1896 GGCTGCGTGGGAACCTCGCTGGTAGTAGTCAGGAAATGGG M. paratuberc.  
1986 GGCTGCGTGGGAACCG-GTGGTAGTAGTCAGCGAAATGGG M. phlei  
1917 GGCTGCGTGGGAACCTCGCTGGTAGTAGTCAGCGAAATGGG M. leprae  
1677 GGCTGCGTGGAGAACCTCGCTGGTAGTAGTCAGCGAAATGGG M. gastri  
1620 GGCTGCGTGGAGAACCTCGCTGGTAGTAGTCAGCGAAATGGG M. kansasii  
4071 GGCTGCAATGGGAACCTCGCTGGTAGTAGTCAGCGAAATGGG M. smegmatis

1690 1700 1710 1720

2634 -GTGACGCAGGAAGGTAGCCGTACCAGTCAGTGGTAATA- M. tuberculosis  
1936 -GTGACGCAGGAAGGAGGCCGTACCAGTCAGTGGTAATA- M. avium  
1936 -GTGACGCAGGAAGGAGGCCGTACCAGTCAGTGGTAATA- M. paratuberc.  
2025 -GTGACGCAGGAAGGTAGCCGTACCAGTCAGTGGTAATA- M. phlei  
1957 -GTGACGCAGGAAGGTAGCCGTACCAGTCAGTGGTAATA- M. leprae  
1717 -GTGACGCAGGAAGGAGGCCGTACCAGTCAGTGGTAATA- M. gastri  
1660 -GTGACGCAGGAAGGAGGCCGTACCAGTCAGTGGTAATA- M. kansasii  
4111 -GTGACGCAGGAAGGTAGCCGTACCAGTCAGTGGTAATA- M. smegmatis

Figure 1G

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	1730	1740	1750	1760					
2672	-CTGGGGCAAGCC	GGTAGGG	AGAGCGATAGGCAAATCCGT		M. tuberculosis				
1974	-CTGGGGCAAGCC	CGTAG	-AGAGCGATAGGCAAATCCGT		M. avium				
1974	-CTGGGGCAAGCC	CGTAG	-AGAGCGATAGGCAAATCCGT		M. paratuberc.				
2063	-C	GGGG	AA	CC	TGTAGGG	GAG	TGATAGGCAAATCCGT	M. phlei	
1995	-CTGG	AGCAAGCC	GTAGGG	GAGCGATAGGCAAATCCGT	M. leprae				
1755	-CTGGGGCAAGCC	AGTAGGG	GAGCGATAGGCAAATCCGT		M. gastri				
1698	-CTGGGGCAAGCC	AGTAGGG	GAGCGATAGGCAAATCCGT		M. kansasii				
4149	-C	GG	GG	AA	AGCC	TGTAGGG	AGTCAGATAGG	AAATCCGT	M. smegmatis

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	1970	1980	1990	2000				
2908	AGGGGG	ACCGGAATAT	CGTGAACACCC	TTGCGGTGGGAGC	M. tuberculosis			
2208	AGGGGG	CCCGGAATAC	CGTGAACACCC	TTGCGGTGGGAGC	M. avium			
2208	AGGGGG	CCCGGAATAC	CGTGAACACCC	TTGCGGTGGGAGC	M. paratuberc.			
2298	AGGGGGACCC	CACG	TACCGTGA	GGG	TCTTGC	GG	AGC	M. phlei
2231	AGGGGG	CCCGGAATAT	CGTGAACACCC	TTGCGGTGGGAGC	M. leprae			
1910					M. gastri			
1934	AGGGGGACCGGAATA	CGTGAACACCC	TTGCGGTGGGAGC		M. kansasii			
4385	AGGGGGACCC	CA	ATGGCGTGA	AGCC	TTACGG	CCCA	AGC	M. smegmatis

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	2410	2420	2430	2440		
3345	AC	CTCGACGCCAGTTGGGGC	GGAGTC	GTTGTTGAAATACC	M. tuberculosis	
284	AC	CTCGACGCCAGTTGGGGCGG	AGTC	GTTGTTGAAATACC	M. bovis	
2645	GC	ACAGACGCCAGTT	TG	TGGAGTC	GTTGAAATACC	M. avium
393	AT	ACAGACGCCAGTT	TG	TGGAGTC	GTTGAAATACC	M. intracellulare
2645	GC	ACAGACGCCAGTT	TG	TGGAGTC	GTTGAAATACC	M. paratuberc.
2737	GCT	CGACGCCAGTT	GGG	TGGAGTC	GTTGAAATACC	M. phlei
2668	AC	TGACGC	TAGTTGGG	TGGAGTC	GTTGAAATACC	M. leprae
1910					M. gastri	
2372	AC	CTCGACGCCAGTTGGGG	TGGAGTC	GTTGAAATACC	M. kansasii	
4822	GC	TCACGCCAGT	TG	GGAGTC	GTTGAAATACC	M. smegmatis

Figure 1H

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	2450	2460	2470	2480	
3385	ACTCTGATCGTATTGG	GCATCTAACCTCGAACCCCTGAATC			M. tuberculosis
324	ACTCTGATCGTATTGGGCATCTAACCTCGAACCCCTGAATC				M. bovis
2685	ACTCTGATCGTATTGG	ACACCTAACGTCGAACCCCT	TATC		M. avium
433	ACTCTGATCGTATTGGACACCTAACGTCGAACCCCT	TATC			M. intracellulare
2685	ACTCTGATCGTATTGGACACCTAACGTCGAACCCCT	TATC			M. paratuberc.
2777	ACTCTGATCGTATTGGGC	CTCTAACCTCGAACCGTGGATC			M. phlei
2708	ACTCTGAT	TGATTGAA	CATCTAACCTCGAACCGTATATC		M. leprae
1910					M. gastri
2412	ACTCTGATCGTATTGG	ACACCTAACGTCGAACCCCTGAATC			M. kansasii
4862	ACTCTGATCGTATTGGGC	CTCTAACCTCGAACCGTATATC			M. smegmatis

	2490	2500	2510	2520	
3425	GGGTTTAG	GGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC		M. tuberculosis
364	GGGTTAGGGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC			M. bovis
2724	GGGTTCA	GGGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC		M. avium
472	GGGTTCA	GGGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC		M. intracellulare
2724	GGGTTCA	GGGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC		M. paratuberc.
2817	GGGTTCA	GGGACAGTGCCTGG	TGGGTAGTTAAC	CTGGGGC	M. phlei
2748	GGGTTAGGGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC			M. leprae
1910					M. gastri
2452	GGGTTCA	GGGACAGTGCCTGGCGGGTAGTTAAC	CTGGGGC		M. kansasii
4902	GGGTTCA	GGGACAGTGCCTGG	TGGGTAGTTAAC	CTGGGGC	M. smegmatis

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	2930	2940	2950	2960	
3864	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	GGTGG	ACCA	M. tuberculosis
3163	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	TATACCA		M. avium
3163	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	TATACCA		M. paratuberc.
3256	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	TATACCA		M. phlei
3187	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	TATACCA		M. leprae
1910					M. gastri
2891	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	TAGTGCACCA		M. kansasii
5342	AGTACGAGAGGACC	GGGACGGACGAACCTCTGGT	TATACCA		M. smegmatis

Figure 11

10/31

	2970	2980	2990	3000	
3904	GTTGT	CCC	G	CAGGGGGCACCGCTGGATAGCCACGTTCGGA	M. tuberculosis
3203	GTTGT	CCC	A	CCAGGGGCACGGCTGGATAGCCACGTTCGGA	M. avium
3203	GTTGT	CCC	A	CCAGGGGCACGGCTGGATAGCCACGTTCGGA	M. paratuberc.
3296	GTTGT	CCC	A	CCAGGGGCACCGCTGGATAGCCACGTTCGGA	M. phlei
3227	GTTGT	TC	A	CCAGGGGCACCGCTGGATAGCCACGTTCGGA	M. leprae
1910					M. gastri
2931	GTTGT	CCC	A	CCAGGGGCACCGCTGGATAGC	M. kansasii
5382	GTTGT	CCC	A	CCAGGGGCACG	M. smegmatis

	3010	3020	3030	3040	
3944	CAGGATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCTTCTC	M. tuberculosis	
3243	CAGGATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCTTCTC	M. avium	
3243	CAGGATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCTTCTC	M. paratuberc.	
3336	CAGGATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCT	M. phlei	
3267	CA	GATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCTTCTC	M. leprae
1910					M. gastri
2971	CAGGATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCTTCTC	M. kansasii	
5422	CAGGATA	ACC	GCTGAAAGCATCTAAGCGGGAAACCT	M. smegmatis	

	3090	3100	3110	3120		
4023	CCCGC	-AGAACACGGG	TTC	CAATAGGT	CAGACCTGGAAAGCT M. tuberculosis	
609	CCCGC	-AGAACACGGG	TTC	CAATAGGT	CAGACCTGGAAAGCT M. bovis	
3322	CCCGC	-AGA	CACGGG	T	GATAGG CAGACCTGGAAAGCT M. avium	
677	CCCGC	-AGAAC	CACGGG	T	GATAGG CAGACCTGGAAAGCT M. intracellulare	
3322	CCCGC	-AGAT	CACGGG	T	GATAGG CAGACCTGGAAAGCT M. paratuberc.	
3415	CCCGC	-AGA	CACGGG	T	GATAGG CAGACCTG	M. phlei
3309					M. leprae	
1910					M. gastri	
3050	CCCGC	-AGAACACGGG	TTC	GATAGG CAGACCTGGAAAGCT M. kansasii		
5501	CCCGC	-AGA	CACGGG	T	GATAGG CAGACCTGGAAAGCT M. smegmatis	

Figure 1J

11/31

	50	60	70	80	
2	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAG	<del>GTCTC</del>			M. tuberculosis
141	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. bovis
39	GC <del>GGCGT</del> <del>A</del> CTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. avium
1	<del>-----</del> TTAACACATGCAAGT <del>A</del> GAACGGAAAG <del>A</del> CC <del>C</del> C				M. intracellulare
39	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. paratuberc.
2	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. scrofulaceum
40	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. leprae
2	<del>-----</del> CG <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. kansasii
2	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. gastri
40	GC <del>GGCGT</del> GCTTAACACATGCAAGTCGAACGG <del>T</del> AAGG <del>C</del> T <del>C</del>				M. gordonae
1	<del>-----</del> GTGCTTAACACATGCAAGTCGAACGGAAAGG	<del>GTCTC</del>			M. marinum
	90	100	110	120	
42	T-----TCGG <del>A</del> GAT <del>A</del> CTCGAGTGGCGAACGGGT				M. tuberculosis
181	T-----TCGGAGA <del>G</del> TACTCGAGTGGCGAACGGGT				M. bovis
79	T-----TCGGAGG <del>T</del> A <del>T</del> CTCGAGTGGCGAACGGGT				M. avium
32	T-----TCGG <del>G</del> <del>G</del> TACTCGAGTGGCGAACGGGT				M. intracellulare
79	T-----TCGGAGG <del>T</del> A <del>T</del> CTCGAGTGGCGAACGGGT				M. paratuberc.
42	T-----TCGG <del>G</del> <del>G</del> TACTCGAGTGGCGAACGGGT				M. scrofulaceum
80	<del>T</del> AAAAAA <del>T</del> CTTT <del>T</del> T <del>T</del> AGAGA <del>T</del> ACTCGAGTGGCGAACGGGT				M. leprae
41	T-----TCGGAGA <del>G</del> TACTCGAGTGGCGAACGGGT				M. kansasii
42	T-----TCGGAGA <del>G</del> TACTCGAGTGGCGAACGGGT				M. gastri
80	<del>T</del> -----GGG <del>G</del> TAC <del>A</del> CGAGTGGCGAACGGGT				M. gordonae
36	T-----TCGGAGA <del>T</del> ACTCGA <del>A</del> TGGCGAACGGGT				M. marinum
	130	140	150	160	
70	GAGTAACACGTGGG <del>T</del> GATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. tuberculosis
209	GAGTAACACGTGGG <del>T</del> GATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. bovis
107	GAGTAACACGTGGG <del>C</del> <del>A</del> ATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. avium
59	GAGTAACACGTGGG <del>C</del> <del>A</del> ATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. intracellulare
107	GAGTAACACGTGGG <del>C</del> <del>A</del> ATCT <del>A</del> CCCTGCAC <del>T</del> TC-GGGATAAA				M. paratuberc.
70	GAGTAACACGTGGG <del>C</del> <del>A</del> ATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. scrofulaceum
120	GAGTAACACGTGGG <del>T</del> <del>A</del> ATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. leprae
69	GAGTAACACGTGGG <del>C</del> <del>A</del> ATCTGCCCTGCAC <del>A</del> C-GGGATAAA				M. kansasii
70	GAGTAACACGTGGG <del>C</del> <del>A</del> ATCTGCCCTGCAC <del>A</del> C-GGGATAAA				M. gastri
104	GAGTAACACGTGGG <del>T</del> <del>A</del> ATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. gordonae
64	GAGTAACACGTGGG <del>G</del> GATCTGCCCTGCAC <del>T</del> TC-GGGATAAA				M. marinum

Figure 2A

12/31

	170	180	190	200	
109	GCCTGGGAAACTGGGTCTAATACCGGATAGGAC	CACGGGA			M. tuberculosis
248	GCCTGGGAAACTGGGTCTAATACCGGATAGGACC	ACGGGA			M. bovis
146	GCCTGGGAAACTGGGTCTAATACCGGATAGGAC	CCTCAAGA			M. avium
98	GCCTGGGAAACTGGGTCTAATACCGGATAGGAC	CTTTAGG			M. intracellulare
146	GCCTGGGAAACTGGGTCTAATACCGGATAGGAC	CCTCAAGA			M. paratuberc.
109	GCCTGGGAAACTGGGTCTAATACCGGATAGGACC	ACTTGG			M. scrofulaceum
160	GCCTGGGAAACTGGGTCTAATACCGGATAGGAC	CTTCAAGG			M. leprae
108	GCCTGGGAAACTGGGTCTAATACCGGATAGGACC	ACTTGG			M. kansasii
109	GCCTGGGAAACTGGGTCTAATACCGGATAGGACC	ACTTGG			M. gastri
143	GCCTGGGAAACTGGGTCTAATACCG	ATAGGACCACAGGA			M. gordonae
103	GCCTGGGAAACTGGGTCTAATACCGGATAGGACC	ACGGGA			M. marinum

	210	220	230	240	
149	TGCATGTCTTGTGGTGGAAAGC	GCGCTTTAG	GGGTGTGGGAT		M. tuberculosis
288	TGCATGTCTTGTGGTGGAAAGCG	CGCTTTAG	GGGTGTGGGAT		M. bovis
186	CGCATGTCTTGTGGTGGAAAGC	TTTT	ACGGGTGTGGGAT		M. avium
138	CGCATGTCTTGTGGTGGAAAGC	TTTT	CGGGTGTGGGAT		M. intracellulare
186	CGCATGTCTTGTGGTGGAAAGC	TTTT	CGGGTGTAGAAT		M. paratuberc.
149	CGCATGCTTGTGGTGGAAAGC	TTTT	CGGGTGTGGGAT		M. scrofulaceum
200	CGCATGTCTTGTGGTGGAAAGC	TTTT	CGGGTGCAGGAT		M. leprae
148	CGCATGCTTGTGGTGGAAAGC	TTTT	CGGGTGTGGGAT		M. kansasii
149	CGCATGCTTGTGGTGGAAAGC	TTTT	CGGGTGTGGGAT		M. gastri
183	CACATGTCTTGTGGTGGAAAGC	TTTT	CGGGTGTGGGAT		M. gordonae
143	TGCATGTCTTGTGGTGGAAAGC	CTTT	CGGGTGTGGGAT		M. marinum

	250	260	270	280	
189	CGAGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. tuberculosis
328	GAGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. bovis
224	GGGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. avium
176	GGGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. intracellulare
224	GGGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. paratuberc.
187	GGGCCC CGGGCCTATCAGCTA	GTGGTGGGATGACGGCCT			M. scrofulaceum
239	GGGCCC CGGGCCTATCAGCTA	TTAGTGGGATGACGGCCT			M. leprae
186	GGGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. kansasii
187	GGGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. gastri
221	GGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. gordonae
181	GGGCCC CGGGCCTATCAGCTTGTGGTGGGATGACGGCCT				M. marinum

Figure 2B

# 13/31

	450	460	470	480	
389	AAACCTTTCACCATCGACGAAGGTCCGGGTT	CTCTCGG			M. tuberculosis
528	AAACCTTTCACCATCGACGAAGGTCCGGGTT	CTCTCGG			M. bovis
424	AAACCTTTCACCATCGACGAAGGTCCGGGTT	CTCTCGG			M. avium
376	AAACCTTTCACCATCGACGAAGGTCCGGGTT	CTCTCGG			M. intracellulare
424	AAACCTTTCACCATCGACGAAGGTCCGGGTT	CTCTCGG			M. paratuberc.
387	AAACCTTTCACCATCGACGAAGGCTCA---CTTGAGG				M. scrofulaceum
439	AAACCTTTCACCATCGACGAAGGCTGGGAATTCTCGG				M. leprae
386	AAACCTTTCACCATCGACGAAGGTCCGGGTTCTCTCGG				M. kansasii
387	AAACCTTTCACCATCGACGAAGGTCCGGGTTCTCTCGG				M. gastri
420	AAACCTTTCACCATCGACGAAGGTCCGGGTTCTCTCGG				M. gordonae
381	AAACCTTTCACCATCGACGAAGGTCCGGGTTCTCTCGG				M. marinum

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	1130	1140	1150	1160	
1069	TCTCATGTTGCCAGGACGTAATGGT	GGGGACTCGTGAGAG			M. tuberculosis
1208	TCTCATGTTGCCAGCACGTAATGGT	GGGGACTCGTGAGAG			M. bovis
1104	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. avium
1056	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. intracellulare
1098	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. paratuberc.
1064	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. scrofulaceum
1119	TCTCATGTTGCCAGCACGTAATGGT	GGGGACTCGTGAGAG			M. leprae
1066	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. kansasii
1067	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. gastri
1100	TCTCATGTTGCCAGCGGGTAATGC	GGGGACTCGTGAGAG			M. gordonae
1061	TCTCATGTTGCCAGCACGTAATGGT	GGGGACTCGTGAGAG			M. marinum

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	1250	1260	1270	1280	
1189	CAATGGCCGGTACAAAGGGCTGCGATGCCCG	CGAGGTTAAG			M. tuberculosis
1328	CAATGGCCGGTACAAAGGGCTGCGATGCCCG	CGAGGTTAAG			M. bovis
1224	CAATGGCCGGTACAAAGGGCTGCGATGCCG	TAGGTTAAG			M. avium
1176	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. intracellulare
1218	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. paratuberc.
1184	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. scrofulaceum
1239	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. leprae
1186	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. kansasii
1187	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. gastri
1220	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. gordonae
1181	CAATGGCCGGTACAAAGGGCTGCGATGCCG	CGAGGTTAAG			M. marinum

Figure 2C

14/31

1290 1300 1310 1320

1229 CGAATCCTTA-AAGCCGGTCTCAGTTCGGATCGGGTCT M.tuberculosis  
1368 CGAATCCTTA-AAAGCCGGTCTCAGTTCGGATCGGGTCT M.bovis  
1264 CGAATCCTTAAAGCCGGACTCAGTTCGGATCGGGTCT M.avium  
1216 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.intracellulare  
1258 CGAATCCTTAAAGCCGGACTCAGTTCGGATCGGGTCT M.paratuberc.  
1224 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.scrofulaceum  
1279 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.leprae  
1226 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.kansasii  
1227 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.gastri  
1260 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.gordonae  
1221 CGAATCCTTAAAGCCGGTCTCAGTTCGGATCGGGTCT M.marinum

1330 1340 1350 1360

1268 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.tuberculosis  
1407 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.bovis  
1304 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.avium  
1256 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.intracellulare  
1298 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.paratuberc.  
1264 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.scrofulaceum  
1319 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.leprae  
1266 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.kansasii  
1267 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.gastri  
1300 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.gordonae  
1260 GCAACTCGACCCCGTGAAGTCGGAGTCGCTAGTAATCGCA M.marinum

Figure 2D

15/31

50 60 70 80

128 TTCCGAACCCGGAAGCTAAGCTGCCAGCGCCGATGATAC M. tuberculosis  
39 TGCGAACCCGGAAGCTAAGCTGCCAGCGCCGATGATAC M. bovis  
41 TCGGAACCCGGAAGCTAAGCTGCCAGCGCCGATGATAC M. phlei  
3559 TACCGAACCCGGAAGCTAAGCTGTCAGCGCCGATGATAC M. leprae  
5743 TCGGAACCCGGAAGCTAAGCTGCCAGCGATGATAC M. smegmatis

90 100 110 120

168 TGCCCCTTCGGG---TGGAAAAGTAGGACACCGCCGAAC M. tuberculosis  
79 TGCCCCTCCGGG---TGGAAAAGTAGGACACCGCCGAAC M. bovis  
81 TGCCCCTCACCGGG---TGGAAAAGTAGGACACCGCCGAAC M. phlei  
3599 TGCCCATTTCGGG---TGGAAAAGTAGGACACCGCCGAAC M. leprae  
5782 TACCCATTCCGGG---TGGAAAAGTAGGACACCGCCGAAC M. smegmatis

Figure 3

# 16/31

	90	100	110	120	
382	GGGAGCTGTCAACCGAGC	<b>ATT</b>	GATCCGAGGATTCCGAAT		M. avium
382	GGGAGCTGTCAACCGAGC	<b>ATT</b>	GATCCGAGGATTCCGAAT		M. paratuberc.
1053	GGGAGCTGTCAACCGAGC	<b>G</b>	<b>G</b> ATCCGAGGATTCCGAAT		M. tuberculosis
467	GGGAGCTGTCAACCGAGC	<b>G</b>	<b>G</b> ATCCGAGGATTCCGAAT		M. phlei
392	GGGAGCTGTCAACCGAGC	<b>G</b>	<b>G</b> ATCCGAGGATTCCGAAT		M. leprae
167	GGGAGCTGTCAACCGAGC	<b>G</b>	<b>G</b> ATCCGAGGATTCCGAAT		M. gastri
110	GGGAGCTGTCAACCGAGC	<b>G</b>	<b>G</b> ATCCGAGGATTCCGAAT		M. kansasii
2548	GGGAGCTGTCAACCGAGC	<b>G</b>	<b>G</b> TTGATCCGAGGAT	<b>G</b> CCGAAT	M. smegmatis

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	170	180	190	200	
462	GAATATATAGGGTGC	<b>G</b>	<b>G</b> AGGCTAACGCGGGGAAGTGAAA		M. avium
462	GAATATATAGGGTGC	<b>G</b>	<b>G</b> AGGCTAACGCGGGGAAGTGAAA		M. paratuberc.
1133	GAATATATAGGGTGC	<b>G</b>	<b>G</b> AGGGAACGCGGGGAAGTGAAA		M. tuberculosis
547	GAATATATAGG	<b>CGT</b>	<b>G</b> GGGGAAACGCGGGGAAGTGAAA		M. phlei
472	GAATATATAGGGT	<b>CG</b>	<b>G</b> GGAGGGAAACGCGGGGAAGTGAAA		M. leprae
247	GAATATATAGGGTGC	<b>G</b>	<b>G</b> AGGGAAACGCGGGGAAGTGAAA		M. gastri
190	GAATATATAGGGTGC	<b>G</b>	<b>G</b> AGGGAAACGCGGGGAAGTGAAA		M. kansasii
2628	GAATATATAGG	<b>CGT</b>	<b>G</b> GGGGAAACGCGGGGAAGTGAAA		M. smegmatis

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	250	260	270	280	
541	-GTCAGTAGTGGCGAGCGAAC	<b>C</b>	<b>C</b> GGAAACA- <b>GG</b> CTAAACCG		M. avium
541	-GTCAGTAGTGGCGAGCGAAC	<b>C</b>	<b>C</b> GGAAACA- <b>GG</b> CTAAACCG		M. paratuberc.
1212	-GCAAGTAGTGGCGAGCGAAC	<b>C</b>	<b>C</b> GGAAACA- <b>GG</b> CTAAACCG		M. tuberculosis
626	-GTGAGTAGTGGCGAGCGAA	<b>A</b>	<b>A</b> GGGAGGATGGCTAAACCG		M. phlei
551	-GCAAGTAGTGGCGAGCGAAC	<b>G</b>	<b>G</b> GGAAACA- <b>GG</b> CTAAACCG		M. leprae
326	-GTCAGTAGTGGCGAGCGAAC	<b>G</b>	<b>G</b> GGAAACA- <b>GG</b> CTAAACCG		M. gastri
269	-GTAAGTAGTGGCGAGCGAAC	<b>G</b>	<b>G</b> GGAAACA- <b>GG</b> CTAAACCG		M. kansasii
2706	<b>G</b> GTGAGTAGTGGCGAGCGAAC	<b>A</b>	<b>A</b> CGGGAGGATGGCTAAAC	<b>G</b>	M. smegmatis

**Figure 4A**

	290	300	310	320	
578	CATG-CATGGACA	ACCGGGTAGGGTTGTGTGCGGGGT			M. avium
578	CATG-CATGGACAACC	GGGTAGGGTTGTGTGCGGGGT			M. paratuberc.
1250	CA	GG-CATGGGTAACCGGGTAGGGTTGTGTGCGGGGT			M. tuberculosis
664	CGTG-CATGTGATACC	GGGTAGGGTTGTGTGCGGGTGT			M. phlei
590	CACA-CATGTCTAACT	AGGTAGGGTTGTGTGCGGGTGT			M. leprae
365	CAOG-CATGGGTGACCGGGTAGGGTTGTGTGCGGGGT				M. gastri
308	CAOG-CATGGGTAACCGGGTAGGGTTGTGTGCGGGGT				M. kansasii
2745	TATG-CATGTGATACC	GGGTAGGGTTGTGTGCGGGGT			M. smegmatis
	330	340	350	360	
617	TGTGGGATTGATATG	TCTCAGGCTCTACCTGGCTGAGG	GG		M. avium
617	TGTGGGATTGATATG	TCTCAGGCTCTACCTGGCTGAGG	GG		M. paratuberc.
1289	TGTGGGAG-GATATG	TCTCAGGCTACCGGGCTGAGA	GG		M. tuberculosis
703	TGTGGGCGCTGTGTGTC	CATCGTCCGCGGGCGATGGCAG			M. phlei
629	TGTGGGATTGGTATGTCT	ACTCTACCTGGTGAGG	GG		M. leprae
404	TGTGGGATCGATA	CGTCTCAGCTACCGGGCTGAGG	GG		M. gastri
347	TGTGGGATCGATA	CGTCTCAGCTACCGGGCTGAGG	GG		M. kansasii
2785	TGTGGGACCTATCT	CGCTCTACCTGGCTGAGGG			M. smegmatis
	370	380	390	400	
656	TAGTCAGAAAGTGT	CGTAGCGGAAGTGGCCTGGGAC			M. avium
656	TAGTCAGAAAGTGT	CGTAGCGGAAGTGGCCTGGGAC			M. paratuberc.
1327	AGTCAGAAAGTGT	CGTAGCGGAAGTGGCCTGGGAT			M. tuberculosis
742	TAGTAAAGCAGTGT	GGTTAGGTGAAGTGGCCTGGGAT			M. phlei
668	TAGTCAGAAAGTGT	CGTAGCGGAAGTGGCCTGGGAT			M. leprae
443	AGTCAGAAAGTGT	CGTAGCGGAAGTGGCCTGGGAT			M. gastri
386	AGTCAGAAAGTGT	CGTAGCGGAAGTGGCCTGGGAT			M. kansasii
2823	AGT	AGAAAATGTGTGGTTAGCGGAAATGGCTGGGAT			M. smegmatis

Figure 4B

18/31

410 420 430 440

696 GCCCCCCGTAGACGGTGAGAGCCC~~GGT~~TACGC~~G~~AAA-ACC *M. avium*  
696 GCCCCCCGTAGACGGTGAGAGCCC~~GGT~~TACGC~~G~~AAA-ACC *M. paratuberc.*  
1367 GGTCTGCCGTAGACGGTGAGAGCCC~~GGT~~TACGC~~G~~AAA-ACC *M. tuberculosis*  
782 GGTCTGCCGTAGTGGTGAGAGCCCTAACGAAA-ACC *M. phlei*  
708 GCCCTGCCGTAGACGGTGAGAGCCCAGTTACGC~~G~~AAA-~~G~~CC *M. leprae*  
483 GGTCTGCCGTAGACGGTGAGAGCCC~~GGT~~TACGTGAAA-ACC *M. gastri*  
426 GGTCTGCCGTAGACGGTGAGAGCCC~~GGT~~TACGTGAAA-ACC *M. kansasii*  
2863 GCCCTCCCGTAGACGGTGAGAGCCC~~GGT~~TACGTGAAA-ACC *M. smegmatis*

450 460 470 480

735 CGGCACCTGCCTATATCAACACCGAGTAGCAGC~~GGG~~CC *M. avium*  
735 CGGCACCTGCCTATATCAACACCCGAGTAGCAGC~~GGG~~CC *M. paratuberc.*  
1406 CGGCACCTGCCAGTTATCAATTCCCGAGTAGCAGC~~GGG~~CC *M. tuberculosis*  
820 GGTCTGCCGCTTACAGG-TCCCGAGTAGCAGC~~GGG~~CC *M. phlei*  
747 GGGCACCTGCCTTGTATCAATTCCCGAGTAGCAGC~~GGG~~CC *M. leprae*  
522 CGGCACCTGCCTTGTATCAATTCCCGAGTAGCAGC~~GGG~~CC *M. gastri*  
465 CGGCACCTGCCTTGTATCAATTCCCGAGTAGCAGC~~GGG~~CC *M. kansasii*  
2902 CGACGTCTGTCTTGATGGTTTCCCGAGTAGCAGC~~GGG~~CC *M. smegmatis*

570 580 590 600

855 GAGGGAAATGGTGAAAAGTTACCCCGGAGGG-AGTGAAATA *M. avium*  
855 GAGGGAAATGGTGAAAAGTTACCCCGGAGGG-AGTGAAATA *M. paratuberc.*  
1526 GAGGGAAATGGTGAAAAGTTACCCCGGAGGGGAGTGAAAGA *M. tuberculosis*  
937 GAGGGAAATGGTGAAAAGTTACCCCGGAGGGGAGTGAAAGA *M. phlei*  
867 GAGGGAAATGGTGAAAAGTTACCCCGGAGGGGAGTGAAATA *M. leprae*  
642 GAGGGAAATGGTGAAAAGTTACCCCGGAGGGGAGTGAAAGA *M. gastri*  
585 GAGGGAAATGGTGAAAAGTTACCCCGGAGGGGAGTGAAAGA *M. kansasii*  
3022 GAGGGAAATGGTGAAAAGTTACCCCGGAGGGGAGTGAAAGA *M. smegmatis*

Figure 4C

610            620            630            640

894 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. avium  
 894 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. paratuberc.  
 1566 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. tuberculosis  
 976 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. phlei  
 907 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. leprae  
 682 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. gastri  
 625 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. kansasii  
 3062 GTACCTGAAACCGTGTGCCTACAATCCGTCAAGAGCCTCCT M. smegmatis

650            660            670            680

934 C-----GTGGGGTATGGCGTGCCTTTGA M. avium  
 934 C-----GTGGGGTATGGCGTGCCTTTGA M. paratuberc.  
 1606 TTTCCCTCTCCGGAGGGGGTGGTATGGCGTGCCTTTGA M. tuberculosis  
 1016 CTT-----GTAGGGGTATGGCGTGCCTTTGA M. phlei  
 947 T-----GTGGGGTATGGCGTGCCTTTGA M. leprae  
 722 T-----GTGGGGTATGGCGTGCCTTTGA M. gastri  
 665 C-----GTGGGGTATGGCGTGCCTTTGA M. kansasii  
 3102 ACGTGT-----GTGGGGTATGGCGTGCCTTTGA M. smegmatis

690            700            710            720

959 AGAATGAGCCTGCAGTCAGGGGACACGTGCGAGGTTAAC M. avium  
 23 AGAATGAGCCTGCAGTCAGGGACACGTGCGAGGTTAAC M. intracellulare  
 959 AGAATGAGCCTGCAGTCAGGGACACGTGCGAGGTTAAC M. paratuberc.  
 1646 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. tuberculosis  
 4 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. bovis  
 1046 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. phlei  
 972 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. leprae  
 747 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. gastri  
 690 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. kansasii  
 3132 AGAATGAGCCTGCAGTCAGGGACATGTGCGAGGTTAAC M. smegmatis

Figure 4D

# 20/31

	770	780	790	800	
1039	CC	CATCCCCCTTGGG-----	GTG	TAGTGGCGTGT	M. avium
103	CGCAT	CCCCCTTGGG-----	GTG	TAGTGGCGTGT	M. intracellulare
1039	CGCATCCC	TTTGGG-----	GTG	TAGTGGCGTGT	M. paratuberc.
1726	CGACCC	CACACGCGCATACGCGCGTGTGA	ATAGTGGCGTGT	M. tuberculosis	
84	CGACCC	CACACGCGCATACGCGCGTGTGA	ATAGTGGCGTGT	M. bovis	
1126	CGTATC	AAACCTGTT-----GGGGTTGGTGTAGTGGGTGT	GTGT	M. phlei	
1052	CGTATC	ACCGTGTGAGCGT-----	GTGT	TAGTGGCGTGT	M. leprae
827	CGTATC	ACCGCGTAAGCGT-----	GTGT	TAGTGGCGTGT	M. gastri
770	CGTATC	CGCGCGAGCGT-----	GTGT	TAGTGGCGTGT	M. kansasii
3212	CGTATC	CCACAAAGAGTGTGTG-----	GTGT	TAGTGGGTGT	M. smegmatis

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	1050	1060	1070	1080	
1307	CAGCCAAACTCCGAATGCCG	TGGTG-TAAAAGC	GTGGCA	M. avium	
1307	CAGCCAAACTCCGAATGCCG	TGGTG-TAAAAGCGTGGCA		M. paratuberc.	
2005	CAGCCAAACTCCGAATGCCG	TGGTG-TA	AAGCGTGGCA	M. tuberculosis	
1401	CAGCCAAACTCCGAATGCCG	A	AAG--TGAAAG	GTGGCA	M. phlei
1323	CAGCCAAACTCCGAATGCCG	TGGT	T-AAAAGCGTGGCA	M. leprae	
1098	CAGCCAAACTCCGAATGCCG	TGGTG-TATA	GCCTGGCA	M. gastri	
1041	CAGCCAAACTCCGAATGCCG	TGGTG-TATA	GCCTGGCA	M. kansasii	
3486	CAGCCAAACTCCGAATGCCG	GT	AAGGCCAAGAGTG	GGAA	M. smegmatis

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	1170	1180	1190	1200	
1425	AGTGGAAAAGGATGTG	TAGTCGCAGA	-GACAACCAGGAGG	M. avium	
1425	AGTGGAAAAGGATGTG	TAGTCGCAGA	-GACAACCAGGAGG	M. paratuberc.	
2122	AGTGGAAAAGGATGTG	AGTCGCAGA	-GACAACCAGGAGG	M. tuberculosis	
1519	AGTGGAAAAGGATGTG	AGTCGC	-GAGAACCAGGAGG	M. phlei	
1441	AGTGGAAAAGGATGTG	AGTCGCAGA	-GACAACCAGGAGG	M. leprae	
1215	AGTGGAAAAGGATGTG	AGTCGCAGA	-GACAACCAGGAGG	M. gastri	
1158	AGTGGAAAAGGATGTG	AGTCGCAGA	-GACAACCAGGAGG	M. kansasii	
3606	AGTGGAAAAGGATGTG	AGTCGCAGA	-GAGAACCAGGAGG	M. smegmatis	

**Figure 4E**

	1250	1260	1270	1280	
1504	CTCACTGGTCAAGTGATT	<b>ATGCGCC</b>	GATAATGTAGCGGGGG		M. avium
1504	CTCACTGGTCAAGTGATT	TATGCGCCGATAATGTAGCGGGGG			M. paratuberc.
2201	CTCACTGGTCAAGTGATT	TGTGCGCCGATAATGTAGCGGGGG			M. tuberculosis
1598	CTCACTGGTCAAGTGATT	TGTGCGC	<b>GATAATGTAGCGGGGG</b>		M. phlei
1520	CTCACTGGTCAAGTGATT	TGTGCGCCGATAATGTAGCGGGGG			M. leprae
1294	CTCACTGGTCAAGTGATT	TGTGCGCCGATAATGTAGCGGGGG			M. gastri
1237	CTCACTGGTCAAGTGATT	TGTGCGCCGATAATGTAGCGGGGG			M. kansasii
3686	<b>T</b> TCACTGGTCAAGTGATT	TGTGCGCCGATA	<b>TGTGCGGGGG</b>		M. smegmatis

  

	1290	1300	1310	1320	
1544	CTCAAGCACACCGCCGAAGCCGCGGGCACAT	<b>T</b> CATCTT-TA			M. avium
1544	CTCAAGCACACCGCCGAAGCCGCGGGCACAT	TTCATCTT-TA			M. paratuberc.
2241	CTCAAGCACACCGCCGAAGCCGCGGGCACAT	<b>T</b> CA	<b>CTTGT</b>		M. tuberculosis
1638	CTCAAGCACACCGCCGAAGCCGCGGGCA	<b>-ATCAGC</b>	<b>TTTG</b>		M. phlei
1560	CTCAAGCACACCGCCGAAGCCGCGGGCACATTCA	<b>T</b> CTTCA	<b>TTTA</b>		M. leprae
1334	CTCAAGCACACCGCCGAAGCCGCGG	<b>ACA</b>	<b>---ACCGC</b>	<b>-A</b>	M. gastri
1277	CTCAAGCACACCGCCGAAGCCGCGG	<b>ACA</b>	<b>---ACCGC</b>	<b>-A</b>	M. kansasii
3726	<b>T</b> TCAAGCACACCGCCGAAGCCGCGG	<b>AA</b>	<b>-GCCAACGT</b>	<b>TTTG</b>	M. smegmatis

  

	1330	1340	1350	1360	
1583	<b>CGGTGGAT</b> TGTGGGTAGGGGAGCGT	<b>CCCC</b>	CATTCA	CAGCGAAG	M. avium
1583	<b>CGGTGGAT</b> TGTGGGTAGGGGAGCGT	<b>CCCC</b>	CATTCA	CAGCGAAG	M. paratuberc.
2280	<b>TGGTGG</b> TGTGGGTAGGGGAGCGT	<b>CCCC</b>	CATTCA	CAGCGAAG	M. tuberculosis
1676	<b>TGGCT</b> GTGTGGGTAGGGGAGCGT	<b>CCCC</b>	TGCAT	<b>CGTGGAAG</b>	M. phlei
1600	<b>GGGTGGAT</b> TGTGGGTAGGGGAGCGT	<b>CCCC</b>	CATTCA	CAGCGAAG	M. leprae
1367	<b>AGGT</b> -----TGGGTAGGGGAGCGT	<b>CCCC</b>	CATTCA	CAGCGAAG	M. gastri
1310	<b>AGGT</b> -----TGGGTAGGGGAGCGT	<b>CCCC</b>	CATTCA	CAGCGAAG	M. kansasii
3764	<b>TT</b> -----TGGGTAGGGGAGCGT	<b>CCCC</b>	TG	<b>ATCGCGTGAAAG</b>	M. smegmatis

Figure 4F

# 22/31

	1370	1380	1390	1400	
1623	CT- <b>CGGGGTGACCGGTGGTGGAGGGTGGGGGAGTGAGAAT</b>				M. avium
1623	CT- <b>CCGGGTGATCGGTGGTGGAGGGTGGGGGAGTGAGAAT</b>				M. paratuberc.
2319	<b>CA</b> CCGGGTGACCGGTGGTGGAGGGTGGGGGAGTGAGAAT				M. tuberculosis
1716	CG <b>CCGAGTGA</b> T <b>CGGTGGTGGAGGGTGAGTGAGAAT</b>				M. phlei
1640	C <b>TCCGGGT</b> A <b>CCGGTGGTGGAGGGTGGGGAGTGAGAAT</b>				M. leprae
1402	CG <b>CCGGGTGACCGGTGGTGGAGGATGGGGGAGTGAGAAT</b>				M. gastri
1345	C <b>TCCGGGTGACCGGTGGTGGAGGATGGGGGAGTGAGAAT</b>				M. kansasii
3796	CG <b>CCGAGTATCGA</b> GTGGTGGAGGGTG <b>AGTGAGAAT</b>				M. smegmatis

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	1530	1540	1550	1560	
1781	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>ATGGG</b>				M. avium
1781	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>ATGGG</b>				M. paratuberc.
2479	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>GTGGG</b>				M. tuberculosis
1875	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>ATGAG</b>				M. phlei
1800	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>GTGTTG</b>				M. leprae
1562	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>GTGGG</b>				M. gastri
1505	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>GTGGG</b>				M. kansasii
3956	CGATGGACAACGGGTTGATATTCCCGTACCCGTGT <b>ATGAG</b>				M. smegmatis

	1570	1580	1590	1600	
1821	<b>CGTCCCTGATGAATCA</b> -GCGGTACTAACCA <b>CCAAAACCG</b>				M. avium
1821	CGTCCCTGATGAATCA-GCGGTACTAACCA <b>CCAAAACCG</b>				M. paratuberc.
2519	CG <b>CCGATGA</b> GAATCA-GCGGTACTAACCA <b>CCAAAACCG</b>				M. tuberculosis
1915	CGTCCCTGATGAATC <b>TCATTCT</b> CTAACCA <b>CCAAAACCG</b>				M. phlei
1840	CG <b>CCGATGAATCA</b> -GCGGTACTAACCA <b>CCAAAACCG</b>				M. leprae
1602	CG <b>CCGATGAATCA</b> -GCGGTACTAACCA <b>CCAAAACCG</b>				M. gastri
1545	CG <b>CCGATGAATCA</b> -GCGGTACTAACCA <b>CCAAAACCG</b>				M. kansasii
3996	CG <b>TCCATGATGAATCA</b> -GCGGTACTAACCA <b>CCAAAACCG</b>				M. smegmatis

Figure 4G

23/31

	1610	1620	1630	1640	
1860	GAT-CGACCAT-T	CCCCTTCGGGGGC	C-GTGGCGATT-C	GG	M. avium
1860	GAT-CGACCAT-T	CCCCTTCGGGGC	GTGGCGATT-C	GG	M. paratuberc.
2558	GAT-CGATCAC	TCCCCTTCGGGG	TGTGGAGTTC	TGG	M. tuberculosis
1955	GCG-CGATC	ATCC	TTGGGG	GTGACGGTTG	GG M. phlei
1879	GAT-CGACCAT	TCCCCTTCGGGGC	TATGGAGGTT	CGG	M. leprae
1641	GAT-CGATCAC	TCCCCTTCGGGG	GTGGAGGTC	TGG	M. gastri
1584	GAT-CGATCAC	TCCCCTTCGGGGC	GTGGAGGTC	TGG	M. kansasii
4035	ACCGTGACCG	GCAC	TTGGGG	TGTGGCGT	TGGTGG M. smegmatis
	1650	1660	1670	1680	
1896	GGCTCGTGG	GACCTTCG	TGGTAGTAGTCAGCAAG	AA	GGG M. avium
1896	GGCTCGTGG	GACCTTCG	TGGTAGTAGTCAGCAAG	CAAT	GGG M. paratuberc.
2594	GGCTCGTGGG	A	CTCGCTGGTAGTAGTCAGCAAG	CGA	GGG M. tuberculosis
1986	GGCTCGTGGG	ACCG	GTGGGTAGTAGTCAGCAAG	CGAT	GGG M. phlei
1917	GGCTCGTGGG	A	CTCG	TGGTAGTAGTCAGCAAG	CGATGGG M. leprae
1677	GGCTCGTGG	AGCCTTCG	CCTGCTGGTAGTAGTCAGCAAG	CGAT	GGG M. gastri
1620	GGCTCGTGG	AGCCTTCG	CCTGCTGGTAGTAGTCAGCAAG	CGAT	GGG M. kansasii
4071	GGCTCG	A	TTGGGACCTTCG	TGGTAGTAGTCAGCAAG	CGATGGG M. smegmatis
	1690	1700	1710	1720	
1936	-GTGACG	CAGGAAGG	CAGCGTACCA	AGTCAGTGGTAATA-	M. avium
1936	-GTGACG	CAGGAAGG	CAGCGTACCA	AGTCAGTGGTAATA-	M. paratuberc.
2634	-GTGACG	CAGGAAGG	TAGCGTACCA	AGTCAGTGGTAATA-	M. tuberculosis
2025	-GTGACG	CAGGAAGG	TAGCGTACCA	AGTCAGTGGTAATA-	M. phlei
1957	-GTGACG	CAGGAAGG	TAGCGTACCA	AGTCAGTGGTAATA-	M. leprae
1717	-GTGACG	CAGGAAGG	CAGCGTACCA	AGTCAGTGGTAATA-	M. gastri
1660	-GTGACG	CAGGAAGG	CAGCGTACCA	AGTCAGTGGTAATA-	M. kansasii
4111	-GTGACG	CAGGAAGG	TAGCGTACCA	GGTCAGTGGTAATA-	M. smegmatis
	1730	1740	1750	1760	
1974	-CTGGGGCAAGCC	CGTAG	--AGAGCG	GTAGGCAAATCCGT	M. avium
1974	-CTGGGGCAAGCC	CGTAG	--AGAGCG	GTAGGCAAATCCGT	M. paratuberc.
2672	-CTGGGGCAAGCC	CGTAG	GGAGAGCG	GTAGGCAAATCCGT	M. tuberculosis
2063	-CGGGG	AAACCG	TGTAGGG	CGAGTGATAGGCAAATCCGT	M. phlei
1995	-CTGG	AGCAAGCC	GTAGGG	AGAGCG	GTAGGCAAATCCGT M. leprae
1755	-CTGGGGCAAGCC	AGCG	TAGGG	AGAGCG	GTAGGCAAATCCGT M. gastri
1698	-CTGGGGCAAGCC	AGCG	TAGGG	AGAGCG	GTAGGCAAATCCGT M. kansasii
4149	-CGG	GTAAAGCC	TGTAGGG	AGTCAGA	TAGGAAATCCGT M. smegmatis

Figure 4H

# 24/31

	1810	1820	1830	1840	
2051	CG-AATT <del>CGGT</del> GATCCTCTGCTGCCAAGAAAAGCCTCTA-				M. avium
2051	CG-AATT <del>CGGT</del> GATCCTCTGCTGCCAAGAAAAGCCTCTA-				M. paratuberc.
2751	CG-AATT <del>CGGT</del> GATCCTCTGCTGCCAAGAAAAGCCTCTA-				M. tuberculosis
2141	CG-AATT <del>CGGT</del> GATCCT <del>T</del> TGCTG <del>T</del> CGAGAAAAGCCTCTA-				M. phlei
2074	CG-AATT <del>CGGT</del> <del>A</del> GCTCTGCTGCCAAGAAAAGCCTCTA-				M. leprae
1834	CG-AATT <del>CGGT</del> GATCCTCTGCTGCCAAGAAAAGCCTCTA-				M. gastri
1777	CG-AATT <del>CGGT</del> GATCCTCTGCTGCCAAGAAAAGCCTCTA-				M. kansasii
4228	CG-AATT <del>CGGT</del> GATCCT <del>T</del> TGCTGCC <del>S</del> AGAAAAGCCTCTA-				M. smegmatis
	1850	1860	1870	1880	
2089	GCGAGG <del>CACATACAC</del> CGGCCGTACCCCAAACCAACACAGGT				M. avium
2089	GCGAGC <del>CACATACAC</del> CGCCGTACCCCAAACCAACACAGGT				M. paratuberc.
2789	GCGAGC <del>CACACAC</del> CGGGCCCGTACCCCAAACCG <del>G</del> ACACAGGT				M. tuberculosis
2179	G <del>C</del> AG <del>C</del> CACATACACCGGCCGTACCCCAAACCAACACAGGT				M. phlei
2112	GCGAGC <del>TACATG</del> CGGGCCCGTACCCCAAACCG <del>G</del> ACACAGGT				M. leprae
1872	GCGAGC <del>CACACAC</del> CGGGCCCGTACCCCAAACCG <del>G</del> ACACAGG				M. gastri
1815	GCGAGC <del>CACACAC</del> CGGGCCCGTACCCCAAACCG <del>G</del> ACACAGGT				M. kansasii
4266	GCGAG <del>CACATACAC</del> CGGGCCCGTACCCCAAACCAACACAGGT				M. smegmatis
	1970	1980	1990	2000	
2208	AGGGGG <del>CCCGGAATA</del> ACCGTGAACACCC <del>TT</del> GC <del>GG</del> GGAGC				M. avium
2208	AGGGGG <del>CCCGGAATA</del> ACCGTGAACACCC <del>TT</del> GC <del>GG</del> GGAGC				M. paratuberc.
2908	AGGGGG <del>ACCGGAATA</del> T <del>CGTGAACACCC<del>TT</del>GC<del>GG</del>GGAGC</del>				M. tuberculosis
2298	AGGGGG <del>ACCG</del> TACCGTGA <del>GGC</del> T <del>CTTGC<del>GG</del>GG</del> AGC				M. phlei
2231	AGGGGG <del>CCCGGAATA</del> T <del>CGTGAACACCC<del>TT</del>GC<del>GG</del>GGAGC</del>				M. leprae
1910					M. gastri
1934	AGGGGG <del>ACCGGAATA</del> ACCGTGAACACCC <del>TT</del> GC <del>GG</del> GGAGC				M. kansasii
4385	AGGGGG <del>ACCG</del> CACAT <del>GGCGTG</del> TAAGC <del>TT</del> ACGG <del>CCCA</del> AGC				M. smegmatis
	2010	2020	2030	2040	
2248	GGGAT <del>T</del> CGGC <del>C</del> GCAGAAACCAGTG <del>GGT</del> AGCGACT-GTTTA				M. avium
2248	GGGATTCGGCCG <del>C</del> CAGAAACCAGTG <del>GGG</del> TAGCGACT-GTTTA				M. paratuberc.
2948	GGGAT <del>C</del> GG <del>T</del> CGCAGAAACCAGTG <del>AGG</del> AGCGACT-GTTTA				M. tuberculosis
2338	GGGG <del>G</del> T <del>GGG</del> T <del>GG</del> CAAAACCAGTG <del>AGG</del> AGCGACT-GTTTA				M. phlei
2271	GGGAT <del>C</del> GG <del>T</del> CGCAGA <del>C</del> CCAGTG <del>AGA</del> AGCGACT-GTTTA				M. leprae
1910					M. gastri
1974	GGGATT <del>CGG</del> T <del>CG</del> CAGAAACCAGTG <del>AGA</del> AGCGACT <del>T</del> GTTTA				M. kansasii
4425	G <del>T</del> GA <del>G</del> T <del>GGG</del> T <del>GG</del> CAAAACCAGTG <del>AGA</del> AGCGACT-GTTTA				M. smegmatis

Figure 4I

# 25/31

2130 2140 2150 2160

2367 CCGTTAACCCGT--AAGGGTGAAGCGGAGAATTAAAGCCC M. avium  
2367 CCGTTAACCCGT--AAGGGTGAAGCGGAGAATTAAAGCCC M. paratuberc.  
3067 CCGTTAACCCGC--AAGGGTGAAGCGGAGAATTAAAGCCC M. tuberculosis  
2457 CCGTTAACCC[TTT]CGGGGTGAAGCGGAGAATTAAAGCCC M. phlei  
2390 C[TGTTAACCCGA]--AAGGGTGAAGCGGAGAATTAAAGCCC M. leprae  
1910 M. gastri  
2094 CCGTTAACCCGC--AAGGGTGAAGCGGAGAATTAAAGCCC M. kansasii  
4544 CCGTTAACCC[CTT]GGGGTGAAGCGGAGAATTAAAGCCC M. smegmatis

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2250 2260 2270 2280

2485 GTAACGACTT[CCA]CTGTCTCAACCATA[GACTCGGCGAA] M. avium  
2485 GTAACGACTTCCC[CAACTGTCTCAACCATA[GACTCGGCGAA] M. paratuberc.  
3185 GTAACGACTTCT[CAACTGTCTCAACCATA[GACTCGGCGAA] M. tuberculosis  
2577 GTAACGACTTCT[CAACTGTCTCAACCATA[GACTCGGCGAA] M. phlei  
2508 GTAACGACTTCT[CAACTGTCTCAACCATA[GACTCGGCGAA] M. leprae  
1910 M. gastri  
2212 GTAACGACTTCT[CAACTGTCTCAACCATA[GACTCGGCGAA] M. kansasii  
4663 GTAACGACTTCT[CAACTGTCTCAAC[A]TAGACTCGGCGAA M. smegmatis

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2370 2380 2390 2400

2605 GTTCGGTACGGTTTGTGTAGGATAGGTGGGAGACT[TTGAA] M. avium  
2605 GTTCGGTACGGTTTGTGTAGGATAGGTGGGAGACT[TTGAA] M. paratuberc.  
3305 GTTCGGTACGGTTTGTGTAGGATAGGTGGGAGACT[GTGAA] M. tuberculosis  
2697 G[TCG]TACGGTTTGTGTAGGATAGGTGGGAGACT[GTGAA] M. phlei  
2628 GTTCGGT[CGGTTTGTGTAGGATAGGTGGGAGACT[GTGAA] M. leprae  
1910 M. gastri  
2332 GTTCGGTACGGTTTGTGTAGGATAGGTGGGAGACT[GTGAA] M. kansasii  
4782 G[TCG]TACGGTTTGTGTAGGATAGGTGGGAGACT[GTGAA] M. smegmatis

Figure 4J

26/31

2410 2420 2430 2440

2645 GCACAGACGCCAGTTGTGTGGAGTCGTTGAAATACC M. avium  
393 ATACAGACGCCAGTTGTGTGGAGTCGTTGAAATACC M. intracellulare  
2645 GCACAGACGCCAGTTGTGTGGAGTCGTTGAAATACC M. paratuberc.  
3345 ACCTCGACGCCAGTTGGGGGGAGTCGTTGAAATACC M. tuberculosis  
284 ACCTCGACGCCAGTTGGGGGGAGTCGTTGAAATACC M. bovis  
2737 GCTCGGACGCCAGTTGGGGGTGGAGTCGTTGAAATACC M. phlei  
2668 ACCTCGACGCCAGTTGGGGGTGGAGTCGTTGAAATACC M. leprae  
1910 M. gastri  
2372 ACCTCAACGCCAGTTGGGGGTGGAGTCGTTGAAATACC M. kansasii  
4822 GCTCACGCCAGTTGGGGGTGGAGTCGTTGAAATACC M. smegmatis

2450 2460 2470 2480

2685 ACTCTGATCGTATTGGACACCTAACGTCGAACCCCT-TATC M. avium  
433 ACTCTGATCGTATTGGACACCTAACGTCGAACCCCT-TATC M. intracellulare  
2685 ACTCTGATCGTATTGGACACCTAACGTCGAACCCCT-TATC M. paratuberc.  
3385 ACTCTGATCGTATTGGGCATCTAACCTCGAACCCCTGAATC M. tuberculosis  
324 ACTCTGATCGTATTGGGCATCTAACCTCGAACCCCTGAATC M. bovis  
2777 ACTCTGATCGTATTGGGCCTCTAACCTCGAACCGTGGATC M. phlei  
2708 ACTCTGATGTATTGGAACATCTAACCTCGAACCCGTAATATC M. leprae  
1910 M. gastri  
2412 ACTCTGATCGTATTGGACACCTAACGTCGAACCCCTGAATC M. kansasii  
4862 ACTCTGATCGTATTGGGCCTCTAACCTCGAACCGTATATC M. smegmatis

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2690 2700 2710 2720

2924 GGTGTCACTCAACGGATAAAAGGTACCCGGGGATAACAG M. avium  
2924 GGTGTCACTCAACGGATAAAAGGTACCCGGGGATAACAG M. paratuberc.  
3625 GGTGTCCTCAACGGATAAAAGGTACCCGGGGATAACAG M. tuberculosis  
3017 GGTGTCCTCAACGGATAAAAGGTACCCGGGGATAACAG M. phlei  
2948 GGTGTCCTCAACGGATAAAAGGTACCCGGGGATAACAG M. leprae  
1910 M. gastri  
2652 GGTGTCCTCAACGGATAAAAGGTACCCGGGGATAACAG M. kansasii  
5102 GGTGTCCTCAACGGATAAAAGGTACCCGGGGATAACAG M. smegmatis

2730 2740 2750 2760

2964 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. avium  
2964 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. paratuberc.  
3665 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. tuberculosis  
3057 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. phlei  
2988 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. leprae  
1910 M. gastri  
2692 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. kansasii  
5142 GCTGATCTTCCCCAAGAGTCATATCGACGGGATGGTTG M. smegmatis

Figure 4K

27/31

	2770	2780	2790	2800	
3004	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. avium
3004	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. paratuberc.
3705	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. tuberculosis
3097	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. phlei
3028	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. leprae
1910					M. gastri
2732	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. kansasii
5182	GCACCTCGATGTCGGCTCGTCGATCCTGGGGCTGGAGCA				M. smegmatis
	2810	2820	2830	2840	
3044	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. avium
3044	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. paratuberc.
3745	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. tuberculosis
3137	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. phlei
3068	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. leprae
1910					M. gastri
2772	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. kansasii
5222	GGTCCCAAGGGTTGGGCTGTTGCC-ATTAAAGCGGCAC				M. smegmatis
	3050	3060	3070	3080	
3283	CAAGATCAGGTTT-CTCACCCATTAGGATAAGGCC				M. avium
638	CAAGATCAGGTTT-CTCACCCATTAGGATAAGGCC				M. intracellulare
3283	CAAGATCAGGTTT-CTCACCCATTAGGATAAGGCC				M. paratuberc.
3984	CAAGATCAGGTTT-CTCACCCACTTGGGGATAAGGCC				M. tuberculosis
570	CAAGATCAGGTTT-CTCACCCACTTGGGGATAAGGCC				M. bovis
3376	CAAGAAGCAGGTTT-CTCACCCACTTGGGGATAAGGCC				M. phlei
3307	CAA				M. leprae
1910					M. gastri
3011	CAAGATCAGGTTT-CTCACCCACTTGGGGATAAGGCC				M. kansasii
5462	CAAGAAGCAGGTTT-CTCACCCACTTGGGGATAAGGCC				M. smegmatis
	3090	3100	3110	3120	
3322	CCCGC-AGACCACGGGATTGATAGGCCAGACCTGGAAAGCT				M. avium
677	CCCGC-AGACCACGGGTTGATAGGCCAGACCTGGAAAGCT				M. intracellulare
3322	CCCGC-AGATCACGGGATTGATAGGCCAGACCTGGAAAGCT				M. paratuberc.
4023	CCCGC-AGAACACGGGTTCAATAGGTTGAGACCTGGAAAGCT				M. tuberculosis
609	CCCGC-AGAACACGGGTTCAATAGGTTGAGACCTGGAAAGCT				M. bovis
3415	CCCGC-AGACCACGGGATGATAGACCAGACCTGGAAAGCT				M. phlei
3309					M. leprae
1910					M. gastri
3050	CCCGC-AGAACACGGGTTGATAGGCCAGACCTGGAAAGCT				M. kansasii
5501	CCCGC-AGACCACGGGATTGATAGACCAGACCTGGAAAGCT				M. smegmatis

Figure 4L

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	130	140	150	160	
107	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. avium
59	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. intracellulare
107	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. paratuberc.
70	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. scrofulaceum
70	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. tuberculosis
209	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. bovis
120	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. leprae
69	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. kansasii
70	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. gastri
104	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. gordonae
64	GAGTAACACGTGGG	CA	ATCTGCCCTGCACTTC	-GGGATAAA	M. marinum
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	450	460	470	480	
424	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTTT	TCGG	M. avium
376	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTTT	TCGG	M. intracellulare
424	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTTT	TCGG	M. paratuberc.
387	AAACCTTT	CACCATCGACGAAGG	CTCA	---CTTG	TGG M. scrofulaceum
389	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTCT	TCGG	M. tuberculosis
528	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTCT	TCGG	M. bovis
439	AAACCTTT	CACCATCGACGAAGGTCT	GGG	ATT	TCGG M. leprae
386	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTCT	TCGG	M. kansasii
387	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTCT	TCGG	M. gastri
420	AAACCTTT	CACCATCGACGAAGGTCCGGG	TTCT	TCGG	M. gordonae
381	AAACCTTT	CACCATCGACGAAGGT	TCGGG	TTCT	TCGG M. marinum
	490	500	510	520	
429	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. tuberculosis
568	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. bovis
464	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. avium
416	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. intracellulare
464	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. paratuberc.
424	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. scrofulaceum
479	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. leprae
426	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. kansasii
427	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. gastri
460	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. gordonae
421	ATTGACGGTAGGTGGAGAAGAAGCACC	GGCCA	ACTAC	GTG	M. marinum

Figure 5A

	1130	1140	1150	1160	
1104	TCTCATGTTGCCAGG	<b>GGGTAAATGC</b>	GGGGGACTCGTGAGAG		M. avium
1056	TCTCATGTTGCCAGCGGG	GGGTAAATGCC	GGGGGACTCGTGAGAG		M. intracellulare
1098	TCTCATGTTGCCAGCGGG	GGGTAAATGC	<b>GGGGGACTCGTGAGAG</b>		M. paratuberc.
1064	TCTCATGTTGCCAGCGGG	GGGTAAATGCC	GGGGGACTCGTGAGAG		M. scrofulaceum
1069	TCTCATGTTGCCAGC	<b>GGGTAAATGC</b>	GGGGGACTCGTGAGAG		M. tuberculosis
1208	TCTCATGTTGCCAGCAC	GGGTAAATGC	GGGGGACTCGTGAGAG		M. bovis
1119	TCTCATGTTGCCAGC	<b>GGGTAAATGC</b>	GGGGGACTCGTGAGAG		M. leprae
1066	TCTCATGTTGCCAGCGGG	GGGTAAATGCC	GGGGGACTCGTGAGAG		M. kansasii
1067	TCTCATGTTGCCAGCGGG	GGGTAAATGCC	GGGGGACTCGTGAGAG		M. gastri
1100	TCTCATGTTGCCAGCGGG	GGGTAAATGCC	GGGGGACTCGTGAGAG		M. gordonae
1061	TCTCATGTTGCCAGC	<b>GGGTAAATGC</b>	GGGGGACTCGTGAGAG		M. marinum

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	1290	1300	1310	1320	
1264	CGAATC	<b>TTTTAAAGCCGGACTCAGTTCGGAT</b>	<b>TGGGTCT</b>		M. avium
1216	CGAATC	TTTTAAAGCCGG	<b>TCTCAGTTCGGATTGGGTCT</b>		M. intracellulare
1258	CGAATC	TTTTAAAGCCGGACTCAGTTCGGATTGGGTCT			M. paratuberc.
1224	CGAATC	TTTTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. scrofulaceum
1229	CGAATC	TTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. tuberculosis
1368	CGAATC	TTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. bovis
1279	CGAATC	TTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. leprae
1226	CGAATC	TTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. kansasii
1227	CGAATC	TTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. gastri
1260	CGAATC	TTAAAGCCGG	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. gordonae
1221	CGAATC	<b>TTAAAGCCGG</b>	<b>TCTCAGTTCGGATC</b>	<b>GGGTCT</b>	M. marinum

	1330	1340	1350	1360	
1304	GCAACTCGACCC	<b>ATGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. avium
1256	GCAACTCGACCC	<b>CATGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. intracellulare
1298	GCAACT	<b>AGACCC</b>	<b>ATGAAGTCGGAGTCGCTAGTAATCGCA</b>		M. paratuberc.
1264	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. scrofulaceum
1268	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. tuberculosis
1407	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. bovis
1319	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. leprae
1266	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. kansasii
1267	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. gastri
1300	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. gordonae
1260	GCAACTCGACCC	<b>CGTGAAGTCGGAGTCGCTAGTAATCGCA</b>			M. marinum

Figure 5B

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2550 2568 2569 2589  
TTACGGCGGCAGGACGAAAGACCCGGGACCTTCACTA  
Mavium 23S:

**Figure 6**

**Figure 7**